

CLAIMS

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A contactless power supply for providing power to a remote device comprising:
5 a resonant circuit having a variable resonant frequency and a primary winding for transferring power to a remote device;
a receiver for receiving information from the remote device;
and a controller for varying the variable resonant frequency in response to information received from the remote device.
- 10 2. The contactless power supply of claim 1 where the resonant circuit includes a variable impedance element having variable impedance, and the controller varies the variable resonant frequency by varying the variable impedance.
3. The contactless power supply of claim 1 further comprising a variable capacitance.
- 15 4. The contactless power supply of claim 2 where the controller varies the variable resonant frequency in response to power information from the remote device.
5. A contactless power supply for providing power to a remote device comprising:
an inverter, the inverter having a duty cycle and an operating frequency;
a resonant circuit coupled to the inverter, the resonant circuit having a resonant
20 frequency, the resonant circuit having a primary for transferring power to the remote device;
a power source coupled to the inverter, the power source having a rail voltage;
a controller for varying the rail voltage, the resonant frequency or the duty cycle;
and a receiver for receiving power information from the remote device.

6. The contactless power supply of claim 5 where the receiver is part of a transceiver.

7. The contactless power supply of claim 6 where the controller varies the rail voltage, the resonant frequency or the duty cycle in response to the power information.

5 8. The contactless power supply of claim 7 further comprising a memory.

9. The contactless power supply of claim 8 where the transceiver communicates a plurality of remote devices.

10. The contactless power supply of claim 9 where the transceiver receives power information from each of the remote devices.

10 11. The contactless power supply of claim 10 where the transceiver creates a list in the memory of the power information.

12. The contactless power supply of claim 11 where the controller determines an optimal setting for the rail voltage, resonant frequency or the duty cycle based upon the list.

13. The contactless power supply of claim 12 further comprising a communication interface for communicating with a workstation.

14. The contactless power supply of claim 13 where the controller creates a communication link between the workstation and the remote device by way of the transceiver.

15. A remote device capable of receiving power from a contactless power supply comprising:

20 a remote device controller; and

a secondary winding having a secondary winding variable impedance.

16. The remote device of claim 15 where the remote device controller is capable of varying the secondary winding variable impedance.

17. The remote device of claim 16 further comprising a remote device transceiver for communicating with the contactless power supply.

18. The remote device of claim 17 where the controller varies the secondary winding variable impedance based upon instructions from the contactless power supply.

5 19. The remote device of claim 18 where the controller disables the operation of the remote device based upon instructions from the contactless power supply.

20. The remote device of claim 19 where the controller enables operation of the remote device based upon instructions from the contactless power supply.

10 21. The remote device of claim 20 where the remote device has a remote device memory, the remote device memory containing power usage information.

22. The remote device of claim 21 where the power usage information is communicated to the contactless power supply by way of the remote device transceiver.

15 23. A method of operating a contactless power supply supplying power to a plurality of remote devices, each of the remote devices having a power usage information, comprising:
receiving the power usage information for each of the remote devices; and
adapting the contactless power supply in response to the power usage information.

24. The method of claim 23 where contactless power supply has an inverter, the inverter having a duty cycle and an inverter frequency, the step of adapting the contactless power supply includes changing the duty cycle or the inverter frequency.

20 25. The method of claim 24 where the contactless power supply has a resonant circuit, and the resonant circuit has a resonant frequency, and the step of adapting the contactless power supply includes changing the resonant frequency of the inverter.

26. The method of claim 25 where the contactless power supply has a rail voltage, and the step of adapting the contactless power supply includes changing the rail voltage.

27. The method of claim 26 further comprising the step of determining whether the contactless power supply is capable of supplying power to the plurality of remote devices.

5 28. The method of claim 27 further comprising the step of disabling at least one of the plurality of remote devices if the contactless power supply is not capable of supplying power to the plurality of remote devices.

29. The method of claim 28 further comprising the step of adapting the contactless power supply if a new remote device has been added to the plurality of remote devices.

10 30. The method of claim 29 further comprising the step of adapting the contactless power supply if one of the plurality of remote devices is removed from the plurality of remote devices.

31. The method of claim 30 where at least one of the plurality of remote devices has a secondary winding and the secondary winding has a secondary winding variable impedance, 15 further comprising the step of varying the secondary winding variable impedance.

32. The method of claim 31 where the step of varying the secondary winding variable impedance is performed as a response to instructions from the contactless power supply.

33. A contactless power supply for providing power to a remote device comprising:
a primary winding for transferring power to a remote device;
20 a receiver for receiving power usage information from the remote device; and
a controller for changing a variable characteristic of the contactless power supply in response to the power usage information.

34. The contactless power supply of claim 33 further comprising a resonant circuit.

35. The contactless power supply of claim 34 where the contactless power supply has a rail voltage, and the variable characteristic includes the rail voltage.

36. The contactless power supply of claim 35 where the contactless power supply has a resonant circuit, the resonant circuit has a resonant frequency, and the variable characteristic
5 includes the resonant frequency.

37. The contactless power supply of claim 36 where the contactless power supply has a duty cycle, and the variable characteristic includes the resonant frequency.

38. The contactless power supply of claim 37 where the contactless power supply has an inverter, and the inverter has an inverter frequency, and the variable characteristic includes the
10 inverter frequency.

39. A remote device for receiving power from a contactless power supply comprising a wireless transmitter for sending power consumption information to the contactless power supply.

40. The remote device of claim 39 where the wireless transmitter comprises an RFID
15 tag.

41. The remote device of claim 39 where the remote device comprises a memory for storing power consumption information.

42. The remote device of claim 41 where the remote device comprises a controller.

43. A remote device capable of receiving power from a contactless power supply
20 capable of being communicatively coupled to a second device by way of the contactless power supply comprising:

a variable inductor for receiving power from the contactless power supply; and
a transceiver for data communication with the contactless power supply.

44. The remote device of claim 43 further comprising a controller for adjusting the variable inductor.

45. The remote device of claim 44 further comprising a memory.

46. The remote device of claim 45 further comprising a rechargeable power source.

5 47. The remote device of claim 46 further comprising a processor.

48. A contactless power supply comprising:

an inductive power supply for inductively energizing a plurality of remote devices;

a transceiver for data communication with the plurality of remote devices;

10 a communication interface for coupling the contactless power supply with a second device; and

a communication controller for managing communication between the second device and the plurality of remote devices.

49. The contactless power supply of claim 48 where the inductive power supply has an inverter and a tank circuit.

50. The contactless power supply of claim 49 where the tank circuit has a variable resonant frequency.

51. The contactless power supply of claim 50 where the inductive power supply has an inverter, and the inverter has an inverter frequency and an inverter duty cycle.

20 52. The contactless power supply of claim 51 where the inductive power supply has a rail voltage.

53. The contactless power supply of claim 52 where the inductive power supply has a circuit sensor.

54. The contactless power supply of claim 53 further comprising a controller capable of changing the resonant frequency, the inverter frequency, the rail voltage or the inverter duty cycle.

55. The contactless power supply of claim 53 where the controller is capable of
5 changing the resonant frequency, the inverter frequency, the rail voltage or the inverter duty cycle in response to information from the plurality of remote devices.